

NONREIMBURSABLE ANNEX NO. 2
BETWEEN
THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
LYNDON B. JOHNSON SPACE CENTER
AND THE UNIVERSITY OF TEXAS AT AUSTIN
UNDER SPACE ACT UMBRELLA AGREEMENT
NO. SAA-EA-20-31149, DATED MARCH 2020

ARTICLE 1. PURPOSE

This Annex shall be for the purpose of furthering NASA Johnson Space Center (NASA or NASA JSC) and the University of Texas's at Austin, (UTA or Partner) goal of facilitating educational initiatives through synergistic activities between UTA graduate programs and joint research opportunities focusing on science and technology topics of interest to NASA. The Software, Simulation, and Robotics Division (ER) within NASA JSC's Engineering Directorate has established a relationship with UTA whereby collaboration in technology development in the areas of mobile manipulation and robotic tool use are conducted. Students and faculty will be able to use robotic systems, testbeds, software products, and data that NASA has developed to enrich their research, subject to any export control considerations. Likewise, this Annex will enable the use of the Nuclear Robotics Group's facilities at the University of Texas for data collection and benchmarking as appropriate.

Many of the robots in the Robotic Systems Technology Branch at NASA JSC could serve as challenging testbeds for, and benefit from, the development of manipulation and tool use algorithms. The Nuclear Robotics Group at UTA focuses on developing techniques to enable autonomous robotic caretaking of high-risk facilities, such as nuclear power plants. This Annex intends to formalize the relationship between the Nuclear Robotics Group and the Robotic Systems Technology Branch.

This Annex will cover collaborations between the Robotics Systems Technology Branch and the Nuclear Robotics Group over the term of the Annex for mutually beneficial technology development. This Annex covers projects that are independently funded in the Nuclear Robotics Group that benefit the Robotic Systems Technology Branch, such as motion planning, task planning, trajectory development, manipulation techniques, and other work. Likewise, this Annex covers projects that exist in the Robotic Systems Technology Branch that may enhance research the Nuclear Robotics Group wishes to support, such as Robonaut, Valkyrie, Gateway IVR, VIPER, EVA Scout, and others. The Annex does not preclude future NASA grants to the Nuclear Robotics Group for solicited or unsolicited proposals.

This Annex allows researchers associated with the Nuclear Robotics Group to have access to the robotic hardware and software platforms in the Robotic Systems Technology Branch at NASA JSC. Likewise, the Annex will allow researchers from the Robotic Systems Technology Branch to have access to the Nuclear Robotics Group at UTA as well as any software packages that may be beneficial to mutual research.

This collaboration will enrich both Parties where UTA students' experience will be broadened and the results of the research will support STEM activities and the NASA mission. In particular, the benefit to NASA JSC is the leveraging of cutting edge research techniques in the advancement of robotic caretaking, manipulation, and mobility applications. The benefit to UTA is the ability to create and test technologies on challenging applications and advanced hardware, and to be able to disseminate that knowledge in the form of peer-reviewed papers and open source software packages. Additionally, UTA students will also benefit by learning, researching, and participating in cutting-edge robotic technology projects of the ER Robotic Systems Technology Branch.

In regards to the NASA mission, this Annex specifically supports the ER Domain Implementation Plans (DIPs), Rover for Robots (4.1.2), IVA/EVA Robotic Caretaker (4.1.4), and Mars Surface Robotic Caretaker (4.1.5). Robot mission planning assets and expertise from Rice are leveraged in support of these DIPs. These DIPs support NASA's Strategic Plan (2018) objectives, specifically Strategic Objective (2.1) and Strategic Objective (3.1), by continuing the development of advanced robotics as well as the autonomous operations of the same for future tasks including on-orbit and in-space assembly and utilization.

ARTICLE 2. RESPONSIBILITIES

NASA will use reasonable efforts to:

1. Conduct a yearly technical interchange meeting with Partner to determine shared technology interests and projects, and set goals for development and integration tasks therein that are within the scope of this Annex.
2. Provide JSC personnel as needed for technical consultation and mentoring throughout, and if possible, insight into NASA developed systems and technologies relevant to any shared interests or projects.
3. Facilitate the use of NASA robots, software, and facilities as necessary.
4. Ensure that members of the Nuclear Robotics Group are aware of applicable NASA and JSC rules, regulations, policies, and procedures as related to their research on NASA hardware or in NASA facilities, including following any applicable export control requirements.
5. Provide access, as appropriate, on a non-interference basis, and based on availability, to the JSC robots, software, tools, and technologies necessary for members of the Nuclear Robotics Group to conduct their research, development, or testing.
6. Complete reports or technical papers on technology developments and testing with Partner as applicable.

Partner will use reasonable efforts to:

1. Support a yearly technical interchange meeting with NASA JSC to determine shared technology interests and projects, and set goals for development and integration tasks therein that are within the scope of this Annex.
2. Submit required information for badging of UTA personnel and students prior to visiting JSC for performing research, integration, or testing utilizing NASA JSC facilities.
3. Oversee Nuclear Robotics Group activities while the Nuclear Robotics Group members collaborate with JSC engineers and contractors to develop technologies within the scope of this Annex.
4. Ensure that members of the Nuclear Robotics Group are aware of applicable NASA and JSC rules, regulations, policies, and procedures, per request or notification by NASA and JSC.
5. Provide UTA personnel to work with the NASA JSC to consult and collaborate on the development of technologies.
6. Provide NASA JSC personnel access as appropriate, on a non-interference basis, and based on availability, to the UTA robots, software, tools, and technologies necessary for members of NASA JSC to integrate, develop, or test their related technologies within the scope of this Annex.
7. Provide NASA JSC with any reports, presentations, or technical papers related to research within the scope of this Annex.
8. Complete reports or technical papers on technology developments and testing with NASA JSC.

ARTICLE 3. SCHEDULE AND MILESTONES

The planned major milestones for the activities for this Annex defined in the "Responsibilities" Article are as follows:

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| 1. Technical interchange meeting (TIM) to determine shared technology interests, and agree upon any goals and scope of integration, development, testing or publication of those shared interests. | Effective Date (ED) + 1 month; then as needed on a yearly basis |
| 2. Partner submits required badging information to NASA JSC. | As needed, at least 1 week before personnel arrival. |
| 3. Partner and NASA JSC to ensure that all understand applicable NASA and JSC rules, regulations, policies, and procedures. | As needed prior to personnel arrival. |
| 4. Partner and NASA JSC facilitate the integration or testing at their facilities. | Dates will vary depending on the outcome of each TIM. |

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| 5. Partner will provide NASA with reports, presentations, and technical papers related to research under this Annex. | As necessary prior to publication or public release of information. |
| 6. Partner and NASA JSC to report to each other on technology developments and testing. | As development and testing occurs, on at minimum a yearly basis. |

ARTICLE 4. FINANCIAL OBLIGATIONS

There will be no transfer of funds between the Parties under this Agreement and each Party will fund its own participation. All activities under or pursuant to this Agreement are subject to the availability of funds, and no provision of this Agreement shall be interpreted to require obligation or payment of funds in violation of the Anti-Deficiency Act, (31 U.S.C. § 1341).

ARTICLE 5. INTELLECTUAL PROPERTY RIGHTS - DATA RIGHTS

A. Data produced under this Annex which is subject to paragraph C. of the Intellectual Property Rights - Data Rights Article of the Umbrella Agreement will be protected for the period of one year.

B. Under paragraph H. of the Intellectual Property Rights - Data Rights Article of the Umbrella Agreement, Disclosing Party provides the following Data to Receiving Party. The lists below may not be comprehensive, are subject to change, and do not supersede any restrictive notice on the Data provided.

1. Background Data: The Disclosing Party's Background Data, if any, will be identified in a separate technical document.
2. Third Party Proprietary Data: The Disclosing Party's Third Party Proprietary Data, if any, will be identified in a separate technical document.
3. Controlled Government Data: The Disclosing Party's Controlled Government Data, if any, will be identified in a separate technical document.
4. The following software and related Data will be provided to Partner under a separate Software Usage Agreement:
 - a. MSC 26281-1: TaskForce
 - b. MSC 25930-1: Affordance Templates
 - c. MSC-26227-1: Robotic Operator Interface

ARTICLE 6. TERM OF ANNEX

This Annex becomes effective upon the date of the last signature below ("Effective Date") and shall remain in effect until the completion of all obligations of both Parties hereto, or five (5) years from the Effective Date, whichever comes first, unless such term exceeds the duration of the Umbrella Agreement. The term of this Annex shall not exceed the term of the Umbrella Agreement. The Annex automatically expires upon the expiration of the Umbrella Agreement.

ARTICLE 7. RIGHT TO TERMINATE

Either Party may unilaterally terminate this Annex by providing thirty (30) calendar days written notice to the other Party.

ARTICLE 8. POINTS OF CONTACT

The following personnel are designated as the Points of Contact between the Parties in the performance of this Annex.

Management Points of Contact

NASA Lyndon B. Johnson Space Center
Montgomery Goforth
Strategic Partnerships Manager, Engineering
Mail Stop: EA1
2101 NASA Parkway
Houston, Texas 77058
Phone: (281) 244-1117
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THE UNIVERSITY OF TEXAS
AT AUSTIN
Mark Davis Featherston
Assistant Director, Office of
Sponsored Projects
3925 W Braker Ln, Bldg. 156, Suite
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Phone: 512-471-6424
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Technical Points of Contact

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Evan Laske
Robotic Systems Technology Branch
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2101 NASA Parkway
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ARTICLE 9. MODIFICATIONS

Any modification to this Annex shall be executed, in writing, and signed by an authorized representative of NASA and the Partner. Modification of an Annex does not modify the terms of the Umbrella Agreement.

ARTICLE 10. SIGNATORY AUTHORITY

The signatories to this Annex covenant and warrant that they have authority to execute this Annex. By signing below, the undersigned agrees to the above terms and conditions.

NATIONAL AERONAUTICS AND
SPACE ADMINISTRATION
LYNDON B. JOHNSON SPACE
CENTER

THE UNIVERSITY OF TEXAS AT
AUSTIN

BY: _____
Kevin Window
Director, Engineering Directorate

BY: _____
Mark Featherston,
Assistant Director, Office of Sponsored
Projects

DATE: _____

DATE: 9 April 2020 _____